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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,218	06/26/2003	Anatoly Chekhmir	GRI-101-CON	3717
28970	7590	07/05/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN LLP 1650 TYSONS BOULEVARD MCLEAN, VA 22102			HERTZOG, ARDITH E	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/606,218	CHEKHMIR ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ardith E. Hertzog	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 6/26 & 7/25, 2003; 5/10 & 6/8, 2005.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 21-28 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 21-28 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 26 June 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date (see action).

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Priority/Response to Amendment***

1. This application is a continuation of application number 09/810,557 filed March 19, 2001, now US 6,734,334. Acknowledgment is also made of applicant's claim for foreign priority based on an application filed in Israel on June 12, 2000. It is noted, however, that applicant has not filed a certified copy of IL 136,685, as required by 35 U.S.C. § 119(b), nor was such copy filed in parent application number 09/810,557. It is further noted that the certified copy may be filed in this later application (see MPEP § 201.14(b) II.). Lastly, the preliminary amendment filed June 26, 2003 has been entered, and claims 21-28 are now pending.

### ***Information Disclosure Statements***

2. Receipt is acknowledged of the information disclosure statements filed, respectively, June 26, 2003, July 25, 2003 and June 8, 2005. As the submissions are in compliance with the provisions of 37 CFR § 1.97, they been considered, per the enclosed PTO-1449 forms.

### ***Drawings***

3. Initially, it is noted that Figure 11 was filed in color in parent application number 09/810,557 and that only a black-and-white photocopy of same has been filed in the instant application. However, based upon paragraph [0012] of the specification, it appears that applicant may wish to have the color version of Figure 11 filed herein. If so, it is noted that:

Color photographs and color drawings are not accepted unless a petition filed under 37 CFR § 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR § 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

**See also the discussion in MPEP § 608.02 VIII., especially re continuing applications; further note MPEP 608.02(i).**

4. The drawings are objected to, in accordance with the enclosed PTO-948 form.
5. The drawings are **further** objected to, because of the following minor informalities:
  - a. In both Figures 3 and 4, in element "300", "See Figure 5" should evidently be "See Figure 6".
  - b. In Figure 10, in element "1014", it appears that [transformed mineral and] should be deleted.
6. **Corrected drawing sheets in compliance with 37 CFR § 1.121(d) are required in reply to the Office action to avoid abandonment of the application.**  
Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended". If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered

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and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR § 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. **Any objection to the drawings will not be held in abeyance.**

***Minor Informalities***

7. The disclosure is objected to, because of the following minor informalities:
  - a. In the new paragraph added before paragraph [0001] of the specification, the status of the parent application should be updated (i.e., by inserting "now US 6,734,334," after "March 19, 2001,").
  - b. In accordance with corrections made in parent application number 09/810,557: in paragraph [0080], at line 6, "low" should be inserted after "very", and in paragraph [00147], at line 2, "5" should be replaced with "6".
  - c. In claim 23, line 2, it is suggested that "with one" be replaced with "selected from the group consisting" for proper Markush group language (see MPEP § 2173.05(h) I.).

Appropriate correction is required.

***Claim Rejections - 35 U.S.C. § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 21-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. It is respectfully submitted that these claim contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. This is a **new matter** rejection. It is not seen where the originally filed disclosure supports the terminology used in independent claim 21, nor the last step recited therein. In particular, claim 21 recites “a waste integrated **immobilizing mineral**” (emphasis added), whereas the originally filed disclosure uses the terminology “a waste integrated mineral” (see, for example, the corresponding definition given at lines 5-7 of para. [0007]), while in “transformation” step 114, it is the “immobilizing mineral” **only** that is transformed “from a less stable mineral” to a “more stable mineral” (vs. the “waste integrated immobilizing mineral”, as now recited) (see element 114 of Fig. 2; the last sentence of para. [0062], and para. [00126] of Example 1). Deleting “immobilizing” from lines 4 and 5 of claim 21 **and** from line 2 of claim 24 would overcome the first aspect of this rejection, while deleting the second occurrence of “waste integrated” from line 5 of claim 21 would overcome the second aspect of this rejection. Appropriate correction is required.

10. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 22 and 25-28 are rejected under 35 U.S.C. § 112, second paragraph, as

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being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered vague, indefinite, and/or confusing, as follows: In claim 22, the phrase "enhancing capability" is considered unclear. That is, it is respectfully submitted that one of ordinary skill in the art would not readily recognize what would or would not comprise such "capability" "enhancement", and thus the metes and bounds of the claim cannot be determined. Incorporating the limitations of claim 23 in claim 22 would be one means of overcoming this aspect of this rejection. In claim 25, "the surrounding matrix" lacks antecedent basis. In claim 26, "the mixture" lacks antecedent basis (with dependent claim 27 correspondingly affected). Inserting "to form a mixture" after "elevated temperature" in claim 26 would be one means of overcoming this aspect of this rejection. In claim 28, the language used throughout the first recited step is considered unclear. That is, it is not immediately clear what is meant by "adding to a mixture of a waste and an immobilizing mineral with one of rock and glass that has components of the immobilizing mineral". It appears that "adding to" should be replaced with "combining", and "with one of rock and glass" should be revised as simply "rock or glass" (being sure to also revise "the one of rock and glass" as "the rock or glass" at lines 5-6). It is further not immediately clear what is meant by "formation of an effective covering of the waste integrated mineral and a surrounding rock or glass matrix"—especially as "the waste integrated mineral" lacks antecedent basis. Lastly, note that as the intended scope of claim 25 cannot be accurately determined (even when read in light of the specification), it has not been rejected on prior art grounds below. Appropriate correction is required.

***Claim Rejections - 35 U.S.C. §§ 102 & 103***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 21-24 are rejected under 35 U.S.C. § 102(b) as anticipated by US 4,297,304 (Scheffler et al., hereinafter "Scheffler"). Scheffler teaches methods for solidifying aqueous radioactive wastes for non-contaminating storage, wherein evaporates of aqueous waste concentrates/suspensions are kneaded with a clay-like substance, molded, then heat-treated, calcined and subsequently fired "to form practically undissolvable mineral phases" (see abstract). As the clay-like substance reads on applicant's "immobilizing mineral" (see also col. 4, lines 4-11, 52-54), Scheffler thus teaches "contacting an immobilizing mineral with a solution containing a waste" and "heating" the resultant product, per instant claim 21, with the formation of "practically undissolvable mineral phases" considered to read on applicant's "less stable... to a more stable mineral" transformation step—note that in the examples, Scheffler explicitly shows sintered body end products (i.e., "a waste product", per instant claim 24) corresponding to "very stable" natural mineral(s) (see col. 8, lines 19-22; col.

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9, lines 5-8). Scheffler further teaches/exemplifies a pH pre-treatment step (see again abstract; para. bridging cols. 3-4; Example I in col. 7), which may be considered to read on applicant's "step of enhancing", per instant claim 23 (and hence instant claim 22). In addition or in the alternative, the step of providing the clay-like substance "with one or more additives to suppress or limit the volatility of certain components" (see col. 4, lines 55-59) may be considered to read on applicant's "enhancing capability" step, per instant claim 22. Thus, as each and every limitation of instant claims 21-24 is taught by Scheffler, this reference anticipates same.

15. Claims 21-24 are rejected under 35 U.S.C. § 102(b) as anticipated by US 3,959,172 (Brownell et al., hereinafter "Brownell"). Brownell teaches processes for encapsulating radionuclides, wherein "radionuclides are immobilized in virtually an insoluble form..." (see abstract). In Example II, strontium ions are immobilized in crystalline strontium aluminosilicate by mixing Sr(OH)<sub>2</sub> with alumina and silica gel in water (i.e., "contacting an immobilizing mineral with a solution containing a waste"); the resulting mixture is placed in an autoclave; the autoclave is placed in an oven at 300°C; and the crystalline solid which results after cooling (i.e., "a waste product", per instant claim 24) "was determined to be orthorhombic crystalline strontium aluminosilicate", disclosed as "the more stable mode" (see especially col. 11, lines 3-38) (i.e., "heating... to transform the... immobilizing mineral from a less stable mineral to a more stable mineral"). Note that the use of silica in gel form may be considered to read on applicant's "enhancing capability" step, per instant claim 22. In Example IV, waste oxide slurries are immobilized by mixing same with kaolinite (which reads on applicant's

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"immobilizing mineral", thus "contacting an immobilizing mineral with a solution containing a waste"), adding sodium silicate, followed by agitation with heating, so as to convert the kaolinite and sodium silicate into microcrystalline insoluble silicates and complex aluminosilicate (i.e., "heating... to transform the... immobilizing mineral from a less stable mineral to a more stable mineral"), wherein the resulting product reads on applicant's "waste product", per instant claim 24. Note that the addition of sodium silicate—explicitly taught as an alkaline agent to raise pH (see col. 8, lines 12-19)—reads on applicant's "step of enhancing", per instant claim 23 (and hence instant claim 22). Thus, as each and every limitation of instant claims 21-24 is taught by Brownell, this reference anticipates same.

16. Claims 26-27 are rejected under 35 U.S.C. § 102(b) as anticipated by US 5,656,009 (Feng et al., hereinafter "Feng"). Feng teaches processes for immobilizing plutonium into vitreous ceramic waste forms, wherein "spent nuclear fuel is bound in a crystalline matrix which is in turn bound within glass" (see abstract). In particular:

Waste is placed into a plasma melter in substantially the same form as it exists in the environment [(i.e., a "solid waste")]. ... The waste as it exists will contain all or part of the elements necessary to form a specific crystal or crystals in a glass phase [(i.e., "an immobilizing mineral")]. ... Elements which are missing from the waste are then provided to insure stoichiometric balance and their availability during crystal formation [(i.e., mixing the solid waste with components of an immobilizing mineral")]. ... The waste is then melted at a temperature between approximately 1000° to 1600°C, depending on the type of crystals to be formed [(i.e., "heating... at an elevated temperature")].

After melting the waste, crystals are formed by allowing the waste to cool [(i.e., "cooling to result in crystallization of the mixture...")]. . . (col. 3, lines 37-66)

Thus, as each and every limitation of instant claims 26-27 is taught by Feng, this

reference anticipates same.

17. Claim 28 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over the Epelbaum et al. article (i.e., the partial translation cited by applicant, hereinafter “Epelbaum”). Epelbaum teaches processes for immobilizing wastes, initially discussing “one more possible barrier that may probably be an effective barrier to the host mineral hosting radioactive elements” which is an “outer zone (overgrowth) of crystal in equilibrium with other rock-forming minerals” (see [p. 126] para.), then later concluding “in the case of dealing with matrix blocks consisting of the host-mineral and glass obtained by melting of the corresponding rock, the overgrown defensive zone has to be formed before the melting” (see [p. 137] para.). Thus, Epelbaum appears to disclose all steps required by instant claim 28—namely, adding to a mixture of radioactive waste and rock (i.e., “an immobilizing mineral”) glass that has components of the rock (since “glass obtained by melting of the corresponding rock”), followed by heating and cooling in order to form “an effective covering... and a surrounding rock or glass matrix”. Alternatively, it could be argued that Epelbaum does not anticipate instant claim 28, in that it is not clear if such process was actually performed (see again [p. 137] para., which states, “The experiments described herein show the possibility of obtaining the particular defensive (stable) matrix using the melt technology for the deep buried waste” (emphasis added)). However, if not anticipated, then processes falling within the scope of instant claim 28 are considered to have been obvious to one of ordinary skill in the art, because, as just discussed, the broad teachings of Epelbaum appear to at least suggest same.

***Double Patenting***

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

19. A timely filed terminal disclaimer in compliance with 37 CFR § 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR § 1.130(b).

20. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR § 3.73(b).

21. Claims 21-28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 and 36-43 of US 6,734,334 (i.e., the patent which resulted from parent application number 09/810,557, of which the instant application is a continuation). Although the conflicting claims are not identical, they are not considered patentably distinct from each other, because:

- a. Patented claims 1-22 are drawn to processes for immobilizing wastes

which may **encompass** the **same** steps recited in instant claims 21-25 (see especially patented claims 3-6, noting that "elevated temperature", per patented claims 5 and 6, when read in light of the patent specification, may mean the "transform... from a less stable... to a more stable..." limitations recited in instant claim 21 (see col. 9, lines 60-66)).

b. Patented claims 36-43 are drawn to processes for immobilizing solid waste which may **encompass** the **same** steps recited in instant claims 26-27 (see especially patented claim 37, noting that the resultant encapsulated "waste integrated mineral", when read in light of the patent specification, is clearly the result of "cooling" (see, for example, Fig. 5 of the patent)).

c. These patented process claims may further **encompass** the **same** steps recited in instant claim 28, noting that "elevated temperature", per patented claims 5, 6 and 36, when read in light of the patent specification, may mean the "melting point" limitations recited in instant claim 28 (see col. 14, lines 15-20) and that the resultant encapsulated "waste integrated mineral", when read in light of the patent specification, is clearly the result of "cooling" (see col. 14, lines 20-31, as well as Fig. 6 of the patent).

### ***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered cumulative to or less material than those discussed above, drawn to processes of immobilizing radioactive/hazardous wastes via fixation/solidification/crystallization and/or the use of one or more barrier

layers. Note that US 4,351,749 is an equivalent of EP 00433397 cited by applicant.

Note that US 6,472,579 is available as prior art, absent a certified copy of applicant's foreign priority document.

23. Any inquiry concerning this communication should be directed to Ardit E. Hertzog at 571-272-1347. The examiner can normally be reached on Monday through Friday (from about 8:00 a.m. - 4:00 p.m.).

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at 571-272-1358. The fax phone number for the organization where this application is assigned is 703-872-9306.

25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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